MATH 100 - WORKSHEET 3 SOLUTIONS

(1) $37 \mod 17 = 3$

(2) In $\mathbb{Z}_{11}$, $7 + 8 = 4$

(3) In $\mathbb{Z}_{11}$, $7 \times 8 = 1$

(4) Solve $x + 2 = 4$ in $\mathbb{Z}_{11}$ $x = 2$

(5) Solve $x + 5 = 1$ in $\mathbb{Z}_{11}$ $x = 7$

(6) $7x = 3 \mod 10$. $x = 9 \mod 10$

(7) $4x = 3 \mod 10$ No solution

(8) $4x = 2 \mod 14$. $x = 4$ and $11 \mod 14$

(9) $5x + 6 = 1 \mod 13$. $x = 12 \mod 13$

(10) $(2 + i) + (3 - 2i) = 5 - i$

(11) $(2 + i) \times (3 - 2i) = 8 - i$

(12) $(-4 + i) \times (-4 - i) = 17$

(13) Solve $x + (2 + i) = 3 - i$ $x = 1 - 2i$

(14) Solve $x + (-2 + 5i) = 2 + 2i$ $x = 4 - 3i$

(15) Factor 2 in $\mathbb{Z}[i]$. $2 = (1 + i)(1 - i)$

(16) Factor 3 in $\mathbb{Z}[i]$. 3 is prime

(17) Factor 4 in $\mathbb{Z}[i]$. $4 = (1 + i)^2(1 - i)^2$

(18) Factor 6 in $\mathbb{Z}[i]$. $6 = (1 + i)(1 - i)3$

(19) Factor 17 in $\mathbb{Z}[i]$. $17 = (4 + i)(4 - i)$

(20) Factor 19 in $\mathbb{Z}[i]$. 19 is prime

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